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ABSTRACT

This paper is intended to stimulate research into the policy consequences of declining school enrollment and to provoke discussion of possible policy alternatives. The paper is organized in three sections. The first section presents a summary of public school enrollment projections for Illinois, based on a 1974 study by the State Department of Research and Statistics. The second section attempts to make current trends more meaningful to individual school districts by more closely examining enrollment trends on both a statewide and county-by-county basis. The third and largest section examines probable consequences of the projected enrollment decline from a macro point of view. In this final section, the discussion focuses primarily on the issues of facility use, school district revenues and expenditures, demand for teachers, and higher education, emphasizing their relationship to each other and to future educational program alternatives. (Author/JG)

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DECLINING ELEMENTARY AND SECONDARY ENROLLMENTS IN ILLINOIS: AN OVERVIEW OF THE IMPLICATIONS

Statistics Section
Illinois Office of Education

February, 1975

EA 007 731

HIGHLIGHTS

Enrollment in Illinois public schools, grades K-12, is projected to decrease from 2,373,659 in the fall of 1971 to between 1,889,000 and 1,996,000 in the fall of 1985. The extent of the decrease will depend upon future births. A birth rate of 2.1 children per female of childbearing age of 14 to 44 will produce the higher enrollment, while a lower birth rate of 1.8 will lead to the lower enrollment.

Regional differences in enrollment patterns will occur due to differences in: (a) rates of economic growth, (b) rates of migration, (c) the age, racial and socio-economic composition of the population, (d) values and attitudes, and (e) differences between actual and desired levels of living.

Present enrollment trends indicate that with the exception of a few down-state counties, the six county collar around Cook County is the only area within Illinois where enrollments continue to increase.

A continued decline in enrollments in Illinois public schools will create a number of problems and furnish a number of opportunities, depending upon the future level of support for education.

The initial impact of changing enrollments is felt in the classroom. Although the teacher is aware of changing class size, the downward trend in enrollment makes its greatest impression when empty classrooms appear and it becomes time to consider the closing of a school building and/or staff reductions.

Faced with surplus space the district has a number of alternatives. First, the facility can be transformed to provide alternative educational programs--programs not possible during the enrollment "crunch." Secondly, the facility can be partially or wholly leased to provide housing for other community services. Lastly, the facility can be closed with alternative uses made of the site. The decision to close a school is the most difficult made by the school board, due to its impact upon the parents, the pupils, and the staff of the school. It is a process which requires time, planning and community involvement.

Projections of future revenues and expenditures for elementary and secondary education are made in the paper. The linear least-squares regression model utilized assumes that the past relationship between the variables will continue in the future. If the statistical relationship between the variables is significant and logical, forecasters often utilize such models to predict future outcomes. The variables treated in the paper are found to have a statistically significant relationship.

Although a substantial decrease in student numbers is expected, rising per pupil costs will prevent any decrease in the overall expenditures for elementary and secondary education. Between 1963-64 and 1972-73, per pupil costs rose from $481 to $1228. That is, within ten years the cost to educate a child increased nearly 2 1/2 times. By 1982-83 the current expenditures per child

will be greater than $2000. If per pupil expenditures increase, as predicted, and K-12 enrollments decrease as projected, within five years (i.e., by 1979-80) total current expenditures will equal nearly $3.7 billion [1/] and within ten years (1984-85) will equal between $4.2 and $4.3 billion.

Between 1963-64 and 1972-73 revenues increased from $1.1 billion to $2.9 billion. Roughly speaking, the aggregate rate of increase in revenues is comparable to that of expenditures. Local tax support has increased from $0.8 billion to $1.4 billion and from state sources from $0.2 billion to $1.0 billion. Federal money provided Illinois school districts has increased eight times from nearly $20 million to $160 million.

Employing the same assumptions and model utilized in projecting expenditures, revenues have been projected to increase $1 billion between 1972-73 and 1979-80. Revenues are projected to increase to $5.1 billion by 1985-86.

With aggregate deficits projected between 1973-74 and 1977-78, the projections indicate steady surpluses in the years beyond. As was stated earlier, statisticians accept the forecasts of such models so long as the model is statistically significant and the functional relationship and results are logical.

[1/] Expenditure and revenue data are rounded to the nearest tenth of a billion dollars.

Projected surpluses of one-half to three-quarters billion dollars by the mid-1980s are not logical. Either expenditures will increase at a more rapid rate or revenues at a slower rate, so as to absorb the surplus.

The projected surpluses are described as an educational "cash reserve." The "cash reserve" is available due to declining enrollments assuming the rise in revenues and per pupil expenditures continue to follow the trend of the past ten years. To policy makers the educational "cash reserve" represents: (a) Funds which can be allocated to expanded educational programs through greater rates of increase in per pupil expenditure than characteristic of the past, and still maintain tax burdens and other budget allocations comparable to those of the past; (b) Funds which can be allocated to tax relief or other social priorities while continuing, at comparable past rates, to increase the per pupil expenditure for education; or (c) Funds which can be allocated to programs, achieving some combination of (a) and (b).

An opportunity afforded policy makers is tax reform. Assuming that the educational "cash reserve" is not entirely allocated to elementary and secondary education, or that it is not absorbed by some other function of government, by the late 1970s and early 1980s declining enrollments will provide the state the opportunity to maintain the rate of increase in expenditure for education of the past ten years and to have a reserve to utilize for the purpose of relief of the burden of local property taxes.

The path followed by those who will allocate state and local revenues will have an important impact upon those employed within the educational sector. Additional resources will be required by school districts if the 1973-74 teacher work force of approximately 110,000 is to be maintained. Such a policy would require approximately $300 to $375 million, (roughly 50 percent) of the educational "cash reserve."

On the other hand, without strong state and local support school districts can be expected to reduce their staff as enrollment declines. If the present pupil-teacher ratio were maintained there would be a need for 11 to 20 thousand fewer teachers by the fall of 1985, the actual decline dependent upon future birth rates. This would reduce the teaching force to between 90 and 100 thousand.

Teacher training institutions are already feeling the pressure of less than anticipated enrollment increases or declining enrollments due to factors not related to the decline in live births. They will suffer new pains as the impact of declining live births, which began in 1959, reaches their doorstep.

Nearly twelve thousand teachers are required each year in order to meet the needs of teacher turnover. In the past, 40 percent of the teachers filling vacated positions were former teachers re-entering the job market. If the past turnover and teacher reentry rates continue, the number of teaching positions open to new teachers would range from 5,900 to 7,300 per year. This

is in sharp contrast to the 13,247 graduates in 1973, and illustrates the potential future problems of teacher training institutions as the supply of new teachers adjusts to meet the projected demand. Without such adjustments there will continue to be an oversupply of teachers. Issues suggested by the supply-demand analysis relate to (a) certification standards, (b) potential revisions of the retirement system to encourage early retirement, and (c) the future demand for teacher education programs.

INTRODUCTION

The widespread appearance of empty desks and surplus space in Illinois school districts has stimulated widespread concern as to the implications of enrollment shrinkage to Illinois education.

It was hardly noticed in the fall of 1972 when total public school enrollment declined for the first time since World War II. In 1973 when enrollment declined another 34,000 students, bringing the total two year pupil lose to 59,000, the Department of Research and Statistics undertook an enrollment projection study.[1/] When published in June of 1974, the study supplemented a body of literature which began appearing for the first time in this generation, literature concerned with the impact of declining enrollments upon public school districts.[2/]

1/ Department of Research, Statistics, and Evaluation. "Illinois School Fall Enrollment Projections: 1974 to 1985." Office of the Superintendent of Public Instruction, June 1974.

2/ Brunetti, Frank. "Enrollment Decline," Council of Educational Facility Planners Journal, August 1974.

Educational Research Service, Inc.. "Enrollment Trends and Staff Reductions," ERS Research Memo, November 1974.

Frankel, Martin M. "Enrollment and Teacher Projections in Public Schools," School Management, 17: June-July, 1973.

Kenough, William F. Jr. "Early Warning Signs of an Enrollment Drop." School Management, 18: August-September, 1974.

Kenough, William F. Jr. "How to Tell If Your District Is on the Brink of an Enrollment Decline," The American School Board Journal, 161: February, 1974.

With results comparable to the national projection of the United States Office of Education 1/, the Illinois projections indicate continued enrollment decreases throughout the rest of the 1970s and into the 1980s.

In order to anticipate the options open to those who influence and who make policy relative to education, it is necessary to attempt to project the impact of declining enrollment upon a number of inter-related issues, such as the impact upon facility needs, the demand and supply of teachers, and the revenues and expenditures of school districts.

Planning is required if adjustments are to be made with a minimum of problems. Ignoring the changing enrollment situation and its potential impact upon education will result in crisis management with decisions being based on greatly inadequate information. Planning is required if adjustments are to be made with a minimum of problems and hardship. 2/

1/ Frankel, Martin M. and Loraine C. Simpson. "Enrollment", Projections of Educational Statistics to 1982-83 (1973 edition). Office of Education, U.S. Department of Health, Education, and Welfare, pp 5, 13-38.

Bureau of Census, U.S. Department of Commerce. "Prospects for American Fertility," Current Population Reports: Population Characteristics. September 1974.

2/ American Association of School Administrators. "Declining Enrollment: What to Do Volume II: AASA Executive Handbook Series. 1974

"Enrollment Trends and Staff Deductions." op. cit.

Educational Facilities Laboratories. Fewer Pupils/Surplus Space. May 1974.

Nyquist, Ewald B. "Declining Enrollments and Expanding Opportunities." Speech in Albany, N. Y., September 10, 1974

The purpose of this paper is to provoke discussion of the policy alternatives and to stimulate in-depth research of the policy consequences of declining enrollments. If district administrators are to have any impact upon the future direction of the change in state policy which will occur due to enrollment shrinkage, they must begin now to develop policy alternatives, analyzing and discussing the consequences of each alternative.

A summary of the Illinois enrollment projections is presented in the first section of the paper. An attempt to bring trends closer to districts is made in the second section by examining enrollment trends by county. The last, and largest, section of the paper examines, from a macro point-of-view, the consequences of the projected downward enrollment trend. Issues discussed focus upon facility use, school district revenues and expenditures, the demand for teachers and the impact upon higher education. Facility usage, teacher force and the fiscal situation of schools are inter-related and relate to future alternatives with respect to educational programs.

ILLINOIS ENROLLMENT TRENDS

During the 27-year period following World War II Illinois Public School enrollment (grades K-12) increased 113 percent reaching a record high of 2,373,659 in the fall of 1971. However, from the record high enrollment in 1971 Illinois Public School enrollment declined 1.1 percent in the fall of 1972 and 2.6 percent in the fall of 1973.

Both the marked increase in enrollments during the decades of the 1950s and the 1960s and the recent decline initiated in the fall of 1972 are direct results of earlier trends in the number of Illinois live births. Following World War II the number of Illinois resident live births consistently increased and reached a record high of 239,871 in 1959. Since 1959, however, the number of live births has steadily declined to a low of 168,992 in 1973. This represents a 29.5 percent decline in live births during the 14 year period 1959-1973.

The enrollments projected in this study are based upon the assumption that the relationships among the conditions which have determined past enrollments will hold true for the future.[1/] While this assumption is necessary, discretion should be exercised in utilizing these statewide enrollment projections for the two following reasons:

1/ In addition to the number of live births, two other conditions which exert a significant influence upon Illinois public school enrollment are the public/nonpublic ratio and in-state or out-of-state net migration.

(1) In a time of dynamic change, such as the present, the relationships among the conditions affecting enrollment may also change.

(2) The enrollment projections reflect statewide, not local conditions. To the extent that local institutional and socio-economic conditions differ from statewide conditions, the projected statewide enrollment trends will also differ from the enrollment trends of any given school district.

In view of these inherent limitations the projected enrollments should be treated as future trends and not as exact or precise numbers.

Enrollment projections were formulated for grades K-12 from the fall of 1974 to the fall of 1985 using an aggregate model. 1/ The aggregate model projects enrollment in kindergarten and grades 1-12 separately, combining the two projections for an aggregate figure. Both projections use the cohort survival ratio, or the ratio of enrollees and the number of live births for a related time period. The cohorts for kindergarten enrollees in any given year are the live births five years prior. The cohorts for enrollees in grades 1-12 for any given year are the sum of the number of children born 6 to 17 years prior.

From the cohort survival ratios for a number of years, a mean survival ratio is determined. The mean ratio is then multiplied by the actual or projected number of kindergarten and grades 1-12 cohorts giving estimated enrollments.

1/ The projection study upon which this paper is based "Illinois Public School Fall Enrollment Projections: 1974 to 1985" also includes projections based on a "grade-by-grade" approach which bases projected enrollment of each grade (X) for a given year upon the enrollment the previous year in the grade X-1. The results of the two approaches were sufficiently comparable and the need to abbreviate the discussion of the projection sufficiently important, that the results of only the aggregate model are used in this paper.

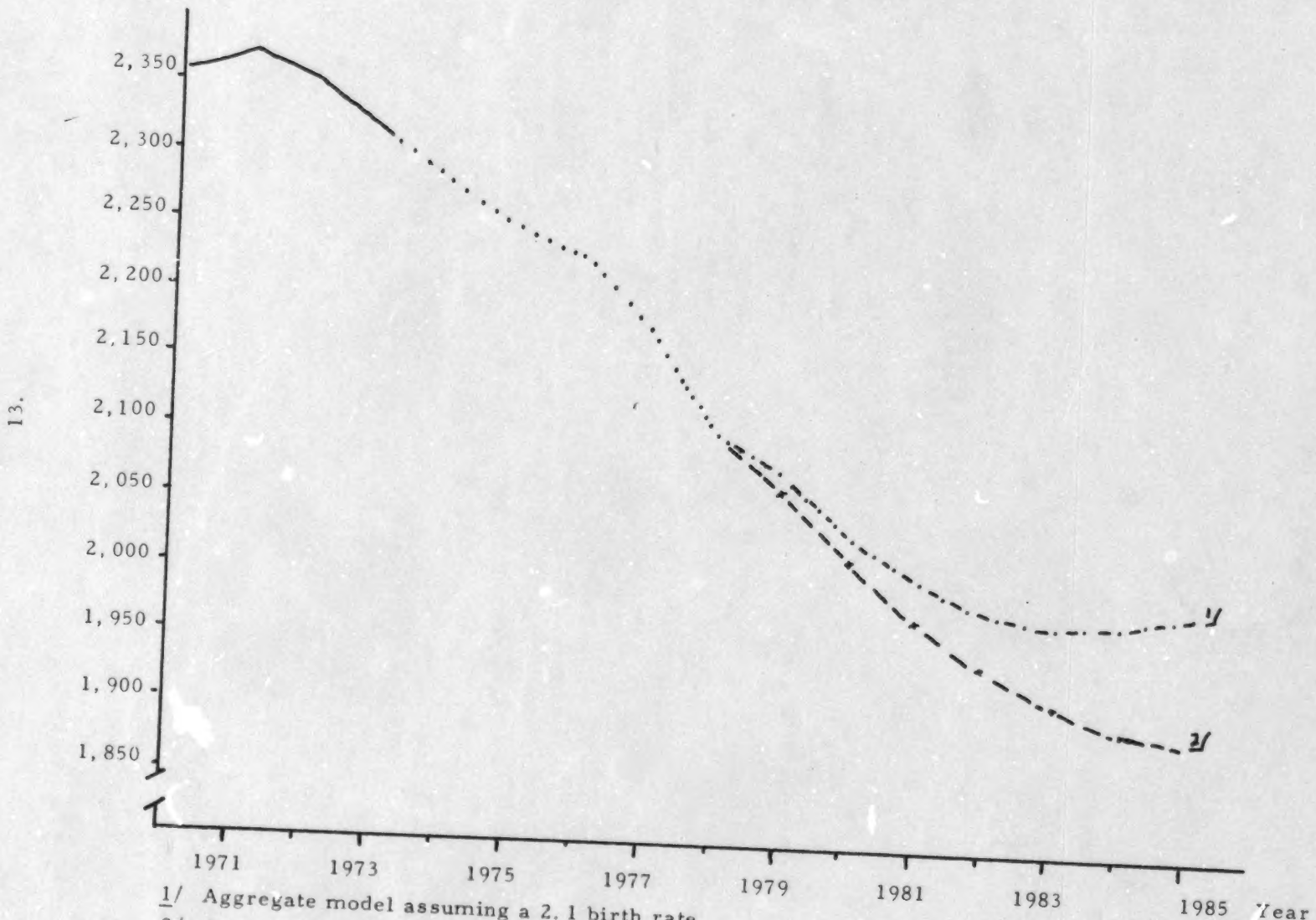
Table 1. K-12 Enrollment Projections, Fall of 1974 to Fall of 1985
(rounded to nearest thousand)

Year	2.1 Birth Rate [1] Projected Enrollment	2.1 Birth Rate [1] Change from 71/72 Peak Year [2]	1.8 Birth Rate [1] Projected Enrollment	1.8 Birth Rate [1] Change From 1971-72 Peak Year [2]
1974-75	2,281,000	- 93,000	[1]	
1975-76	2,252,000	-122,000	[1]	
1976-77	2,229,000	-145,000	[1]	
1977-78	2,179,000	-195,000	[1]	
1978-79	2,104,000	-270,000	[1]	
	Based upon Projections of Live Births [1]			
1979-80	2,073,000	-301,000	2,065,000	-309,000
1980-81	2,031,000	-343,000	2,015,000	-359,000
1981-82	2,001,000	-373,000	1,972,000	-402,000
1982-83	1,977,000	-397,000	1,935,000	-439,000
1983-84	1,969,000	-405,000	1,912,000	-462,000
1984-85	1,971,000	-403,000	1,897,000	-477,000
1985-86	1,979,000	-395,000	1,889,000	-485,000
	%Change From 71-72	Annual Rate of Change (%)	% Change From 71-72	Annual Rate of Change
1974-75	- 3.9%	-1.3%	[1]	
1975-76	- 5.1	-1.3	[1]	
1976-77	- 6.1	-1.0	[1]	
1977-78	- 8.2	-2.3	[1]	
1978-79	-11.4	-3.5		
	Based Upon Projections of Live Births [1]			
1979-80	-12.7%	-1.5%	-13.0%	-1.9%
1980-81	-14.5	-2.0	-15.1	-2.4
1981-82	-15.7	-1.5	-16.9	-2.1
1982-83	-16.7	-1.2	-18.5	-1.9
1983-84	-17.1	-0.4	-19.5	-1.2
1984-85	-17.0	0.1	-20.1	-0.8
1985-86	-16.6	0.4	-20.4	-0.4

[1] Children born in 1974 will not enter Kindergarten until 1979, therefore the alternative assumptions concerning live birth rates have no impact upon enrollment until 1979.

[2] Enrollment in the fall of 1971 equalled 2,373,659, which was an increase of 20,875 over 1970 Enrollment. In 1972 enrollment dropped 26,138 to 2,347,521 and in the fall of 1973 to 2,311,797 - a decrease of 61,862 from the 1971 peak enrollment year.

Figure 1. Actual and Projected Enrollment, Fall of 1970 to Fall of 1985



1/ Aggregate model assuming a 2.1 birth rate

2/ Aggregate model assuming a 1.8 birth rate

The aggregate model employs two different assumptions as to birth rates, 1.8 and 2.1 children per woman. A number of demographers feel that the 2.1 birth rate is the long-run birth rate, and it is referred to as the "replacement-level birth rate". The 1.8 birth rate, on the other hand, most accurately reflects the trends of the past two years.

Table I and Figure 1 present the projected total enrollment (K-12) from the fall of 1974 through the fall of 1985. The highlights of these Illinois public school enrollment projection results are summarized below:

(1) Assuming a 2.1 birth rate, enrollment is projected to decline from 2,321,000 in the fall of 1973 to 1,969,000 in the fall of 1983. Slight enrollment gains are registered in the fall of 1984 (2,000 pupils) and the fall of 1985 (8,000 pupils).

(2) Assuming a 1.8 birth rate, enrollment continues to decrease throughout the projection period reaching a low of 1,889,000 by 1985-86. This represents a 20.4 percent decline in enrollment from the fall 1971 peak year enrollment. The rate of decrease is less in the last two years of the projection period.

When the 2.1 birth rate assumption is employed, extended projections into the middle and latter 1980s suggest a cessation of the declining trend, followed by a gradual increase in total enrollment. These extended projections, however, assume that the 14-year declining trend in Illinois live births (1959-1973) will be reversed during 1974 and that a sustained upward trend in Illinois live births will begin in 1974 and continue throughout the remainder of the 1970s. While this assumption is based upon the strong probability that the number of women of child-bearing age will continue to increase throughout the 1970s, counteracting socio-economic conditions are also evident. The escalating inflationary trends of recent years and the social changes in family attitudes, values, and lifestyle appear to be exerting a downward effect upon the annual number of live births. If, therefore, the number of Illinois resident live births does not increase during 1974 and succeeding years, the decline in Illinois public school total enrollment can be expected to extend into the latter part of the 1980s and to exceed to 16 percent.

COUNTY ENROLLMENT PATTERNS

Statewide enrollment trends are not, necessarily, directly associated with those of a given locale or region. That these changes are subject to regional variations and that these variations are subject to differences in local or regional circumstances can be best portrayed by the increased awareness of changes in enrollment. For example, a southern Illinois newspaper headline read

Figure 2. Public Fall Enrollment by County, 1971

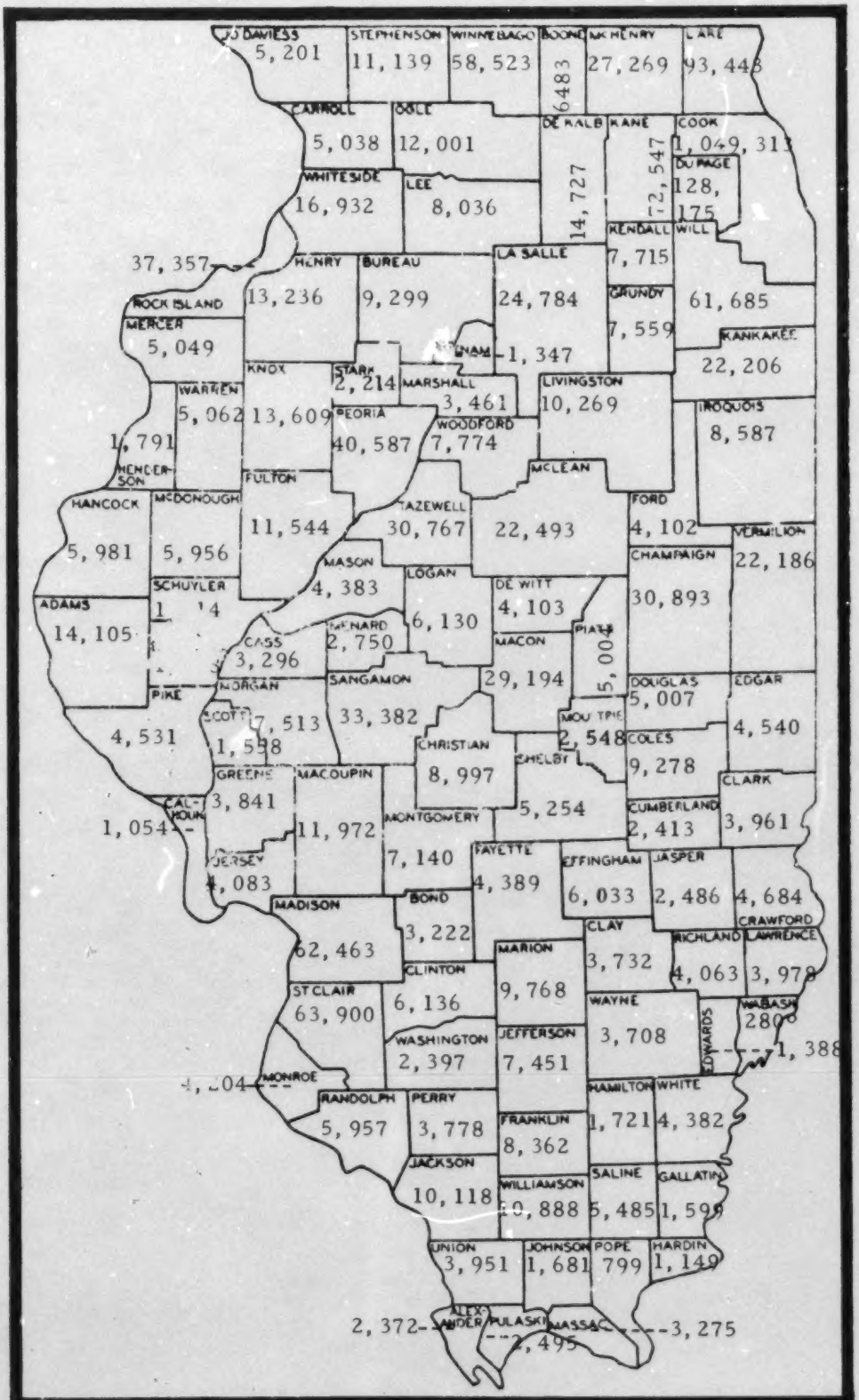
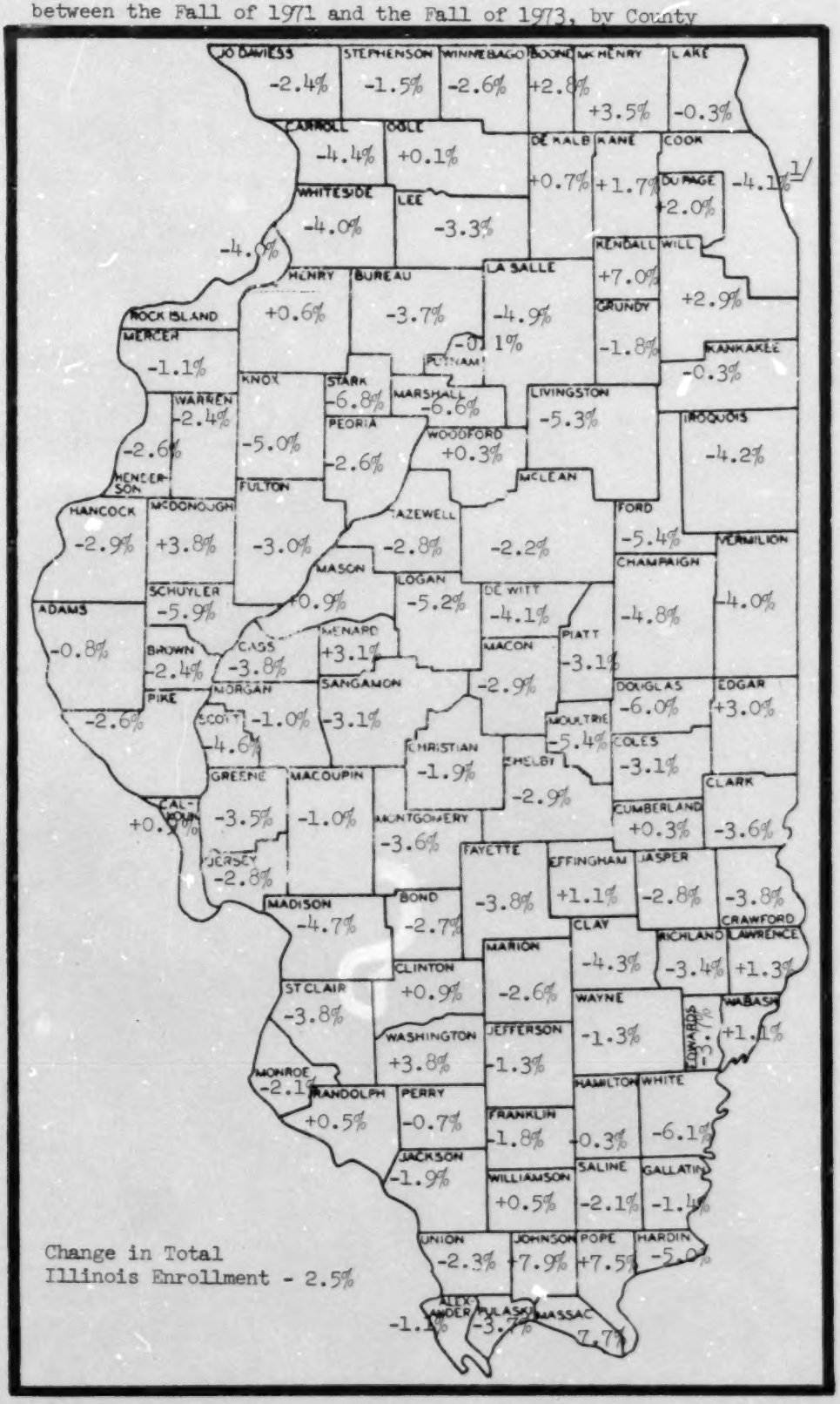


Figure 3. Percentage Change in Public School Enrollment between the Fall of 1971 and the Fall of 1973, by County



1/ Enrollment in Chicago District 299 declined by 5.9%

"Study Predicts Shifts in Local School Population",[1] and a suburban Chicago report headlined "School Enrollments Fall as Housing Costs Rise".[2] The number of pupils in a school system is associated with the socio-economic and demographic characteristics of the population within the locale or region. Therefore, to the extent that local school system characteristics reflect those of the state, local enrollment trends will mirror those of the state.

Among the characteristics which can vary between regions are: (1) rates of migration and the socio-economic characteristics of the migrants; (2) rates of economic growth; (3) differences between actual and desired level of living (i.e., level and standard of living); (4) differences in the cost of living; (5) differences in the age, racial and socio-economic composition of the population; and (6) differences in values and attitudes. Regional differences in these factors produce a differential impact upon birth rates, and thus upon enrollment. Illustrating differential demographic data is a recently released study by Planned Parenthood researchers:

> The researchers have found that birth rates among low-income Americans are going down faster than those in the population as a whole. There were 152.2 births per thousand low-income families each year in the early 1960s, In 1971-72 that rate dropped to 108.5. At the same time the birth rate among higher-income families dropped...from 98.1 to 71.0.[3]

Public enrollment is further impacted by differential regional changes in nonpublic enrollment. For example, between the fall of 1972 and the fall of 1973 public enrollment in McDonough County increased by 5.3 percent.

1/ Pharis, Julie. "Study Predicts Shifts in Local School Population," Journal-Gazette, November 12, 1973.

2/ DeMuth, Jerry. "School Enrollments Fall as Housing Costs Rise," Chicago Sun-Times, p. 12, December 9, 1973.

3/ "Fertility Rates." The New Republic, pp. 7-8, July 6-13, 1974. (paraphrased).

However, the closing of one parochial school accounted for the increase. When public and nonpublic enrollment are combined, total enrollment in McDonough County decreased by slightly more than 3 percent between 1972 and 1973.

Figure 2 shows public school enrollment by county in the fall of 1971. Figure 3 presents the percentage change in public school enrollment between the fall of 1971 and the fall of 1973 by county. Enrollment in 1971 is used as the base-line year because Illinois K-12 enrollment peaked in 1971 at nearly 2,374,000. An additional 6,000 students were enrolled in public school pre-kindergarten programs. Between 1971 and 1973, total enrollment declined from 2,379,982 to 2,320, 672, or 2.5 percent.

The 2.5% statewide decline in pre-kindergarten through 12th grade enrollment can be used as a barometer for comparing enrollment trends in the 102 Illinois counties with that of the state.

The following observations are made concerning enrollment data by county:

(1) Of the 102 counties, enrollment decreased by 2.5 percent or more in greater than half (54) of the counties. Enrollment decreased by less than 2.5 percent in 25 counties and increased in 23 counties. In six of the 23 counties having public school enrollment increases, the increased school enrollment can be attributed to the closing of nonpublic schools.

(2) In a ring of counties surrounding Cook County enrollment continues to increase.

(3) In deep southern Illinois, the rate of decline in enrollment is lagging behind that in all parts of the state except the northeast with increased enrollment being the case in a substantial number.

(4) Of the nine Standard Metropolitan Statistical Areas (SMSAs)[1/] in Illinois, the counties in four had enrollment declines of greater than 2.5 percent. Three of these SMSAs represented single county units. McLean County had an enrollment decrease of less than 2.5 percent (2.2 percent). Within each of the remaining four SMSAs, in at least one county enrollment decreased by more than 2.5 percent and in at least one county enrollment increased.

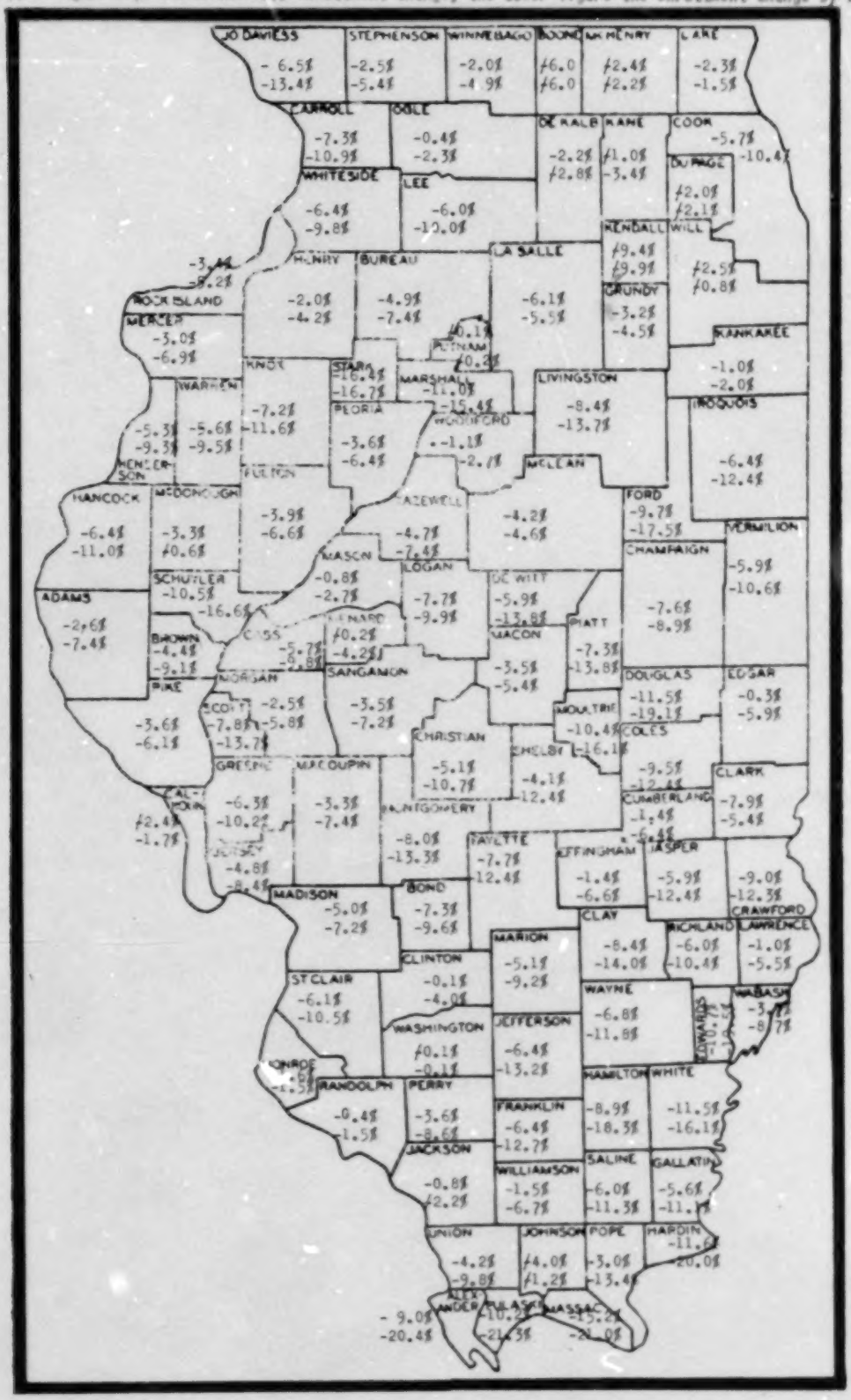
(5) When the SMSAs are viewed as single units, in contrast to looking at the enrollments of the counties within each SMSA, the decreases in enrollment between the fall of 1971 and the fall of 1973 ranged from 2.1 percent in the Rockford SMSA of Winnebago and Boone counties to 4.8 percent in the Champaign SMSA. The enrollment in all of the SMSAs declined. In the six of the nine SMSAs the percentage decline in enrollment between 1971 and 1973 was greater than the decline registered for the state as-a-whole.

Enrollments by county have been projected by the Bureau of the Budget, Office of the Governor. Projecting enrollments at the county and/or school district level becomes more difficult, with greater likelihood of error, due to the poorer quality of the following data: (a) live births; (b) migration rates; (c) mortality rates; and (d) current population estimates by age group.

The Bureau of the Budget projections are based upon a model which utilizes 1970 Census data and fall enrollment data to determine the proportion of school age children enrolled in public schools. The school age population is then projected for each county for 1975 and 1977 and the above ratio is applied to the projected number of public school pupils.

1/ A Standard Metropolitan Statistical Area is a term defined by the U.S. Bureau of the Census and represents urban centers in Illinois.

Figure 4 Projected 1975 and 1977 Enrollments as a Percentage of 1971 Enrollment, by County [1]
(the upper figure represents the 1975 enrollment change, the lower figure the enrollment change by 1977)



[1] Data from unpublished projections completed by the Bureau of the Budget, Governor's Office, State of Illinois, June, 1974.

Figure 4 presents the projected percentage change in public school enrollment from 1971 to 1975 and 1977. The top number represents the percentage change between 1971 and 1975 and the figure below is the projected change between the fall of 1971 and the fall of 1977.

The Bureau of the Budget projections indicate a total Illinois public school enrollment of 2,282,000 in 1975 and 2,198,000 in the fall of 1977, representing declines of 3.9 percent and 7.4 percent from the 1971 peak enrollment. 1/

From Figure 4, the only region of the state sustaining an enrollment increase will be the collar of counties surrounding Cook County. Six of the nine counties having projected 1975 enrollments greater than those in the 1971 base year are in the region. Of the ten counties having projected 1977 enrollments greater than those in 1971, six are in the Cook County collar (Will, Kendall, DuPage, Kane, McHenry, and Boone).

The few downstate counties where enrollments will be greater than they were during the 1971 peak year are anomalies. Generally, their increases are due to the closing of a nonpublic school, the location of a job producing facility, or improved highways stimulating residential development for commuters to urban-centered jobs.

1/ The Bureau of the Budget model projects 30,000 more pupils in 1975 and 19,000 more pupils in public schools in 1977 than projected in this paper.

CONSEQUENCES OF DOWNWARD ENROLLMENT TREND

For decades educators have been involved in what economists describe as a growth industry. Decisions have been made at all levels based upon expectations of an expanding demand for education.

Hugh sums were invested in facilities and staff in order to train more teachers. School districts responded to enrollment pressures by expanding facilities, services, teaching and administrative staffs. Increasingly, legislative bodies substituted state and federal monies for local tax dollars. Such assistance was often tied to enrollment or attendance data with growing districts receiving more outside support. In short, educational planning at all levels has been directed by a "psychology of growth."

The mental adjustments that will be required for educational planning, at least over the next ten years, will not be easy. Education, which presently accounts for 8 percent of our nation's gross national product and is the principal source of employment for 29 percent of the U.S. population, is an important sector of the economy now facing the prospect of declining demand. At the very least, this will necessitate a reallocation of resources within education and may well mean the withdrawal of resources. The decisions to be made will be difficult, but at the same time opportunities arise from these challenges.

Facilities

The initial impact of changing enrollments is felt in the classroom. Responding to rising enrollments, new buildings are constructed and additions made to old ones. After a quarter of a century of rapid growth, problems have changed from what to do about overcrowding, double sessions, and temporary facilities, to what to do about empty classrooms. The downward enrollment trend made its greatest impression when it arrived to the point where empty classrooms appeared and school buildings closed.

Whether a given area grew or declined in the sixties was usually the result of four factors: (1) a decline in fertility; (2) a reduction in the rate of migration from rural to urban areas; (3) a declining desire to live in the central city; and (4) an accentuation of the uneven distribution of population through intermetropolitan migration. 1/

The movement of people--particularly young people--compounds the school facility problem. Declining enrollments may become more pronounced than can be explained by the drop in birth; conversely, it may be slowed or even reversed It all depends on the size and age of the migrating groups.

In Fewer Pupils/Surplus Space staff of Educational Facilities Laboratories examined some of the harsh questions which many school superintendents are going to have to face. "What do you do with empty classrooms? Should you close

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1/ Fewer Pupils Surplus Space. op. cit., p. 19

off part of a building? What do you do with an unused school? Can you unload it and to whom? What are the alternatives to just abandoning an extra building?" 1/

It is important to recognize that shrinkage does not happen overnight; it creeps up. First there is one empty room, and a use will be found for it, then another and another.

When first faced with declining enrollments the initial reaction of the school board and the administration is to question whether the enrollment shrinkage will continue. The doubts created by this relatively new experience have generally led to preserving the control of the facility or rooms by the district through alternative educational or community uses of the facility or through the leasing of the facility to another incorporated political unit (e.g. municipality).

Educational Uses

Declining enrollments offer opportunities, some of which may allow economies or improvements in the quality of operations, while others will require the commitment of additional resources. It should further be recognized that operations which continue to require the same level of physical inputs (buildings, teachers, support) can provide improved services to students, but costs will not decrease. Cost reduction will require a withdrawal of resources.

1/ Fewer Pupils/Surplus Space. op. cit., p. 28.

Among the economies which can occur from enrollment shrinkage are those allowed by the closing of outmoded, unsafe, or small schools, resulting in a reduction of overhead or fixed costs, staff reductions, and the potential improvement of the educational environment. Portable facilities, which normally have high per pupil fixed costs, can be phased out. Potential savings may accrue due to the consolidation of administrative services, feasible due to surplus space. Pressure for double-shifts is relieved.

More space will allow for a betterment in the environment which should improve the quality of the learning atmosphere and thus the education. Smaller class sizes become feasible; more space is available for a library; greater privacy for students, teachers, counselors, and administrators is possible. Conference rooms, not possible during the enrollment "boom", now become a feasible alternative use.

If resources are available, administrative, pupil and professional services can be expanded. "Curriculum enrichment" becomes an initial consideration--art and music rooms can be recaptured, elementary libraries established, and new techniques and technologies (e.g., media centers) can be adopted.

A further shifting of resources may allow for the development of alternative schools, continuing education centers, dropout prevention programs, daytime adult education, early childhood education programs, and programs for senior citizens.

Community Uses

Once the district has modified its program to the extent that is feasible when available resources are considered, additional space may be or may become available. The district then faces the decision of whether to continue its ownership of the facility by allowing a substitute use or of disposing of the facility.

Due to uncertainty as to the future of school enrollments, school boards and administrations may decide that rather than destroying or selling the facility an interim use should be found. As school districts serve the same clientele and share the same goal of community service, the board may decide it is in the community's interest to allow another unit of government to use or to rent the facility. School districts have leased their facilities to park districts, to housing authorities, to municipalities or counties.

Non-profit, non-governmental, service agencies (such as those supported by the United Way) often need facilities. However, due to Illinois law, school districts cannot directly provide such agencies space. Space can be provided indirectly by making it available to another incorporated political unit (e.g., municipality) which then makes it available to the service agency.

Closing the School

Suppose the decision to close a school cannot be avoided. Establishing priorities ahead of time for the disposal of schools helps clarify the options and eases the closing process. School closings are almost always viewed

negatively. However, sufficient planning can help prevent last minute decisions that may be poorly thought out.

The Educational Facilities Laboratories report outlines the following requirements for a facilities disposal plan:

- A set of agreed-on goals, with specific objectives spelled out for each.
- A factual base defining the "givens" upon which the plan can be developed... this base includes enrollments and their projections; schools, their location, capacity, and general adequacy; community changes effecting the location of people and the composition of their groupings... Cost data on a new construction and/or renovation may also be required.
- An analysis of the factual data.
- A set of possible solutions: alternative grade organizations, patterns of school use, abandonment for outmoded and/or unsafe schools, needed new construction or closings (or both).
- A choice among alternatives for a preferred course of action; a justification for the alternative selected; the preparation of the time sequence for the actions to be taken; a cost analysis of the implications of the selected plan as against alternative options.

The report further pointed out a common admonition from administrators who have developed plans for school closings.

> "Know your numbers. Not by district totals only, but by individual schools; not for only this year and the next, but for the next five to ten. Above all, be able to defend your projections." 1/ They add, "Yet some school districts--and rather large ones--view the whole matter of numbers quite casually and seem satisfied with little more than a simple head count. Questions about birth rates, women of childbearing age, or mobility draw blanks." 2/

1/ Fewer Pupils/Surplus Space. op. cit., p. 40

2/ Ibid.

Due to the heavy capital requirement of facilities and the increasing tax-consciousness of the community, school boards and administrators must be aware of the changing composition of their communities, their enrollment patterns, and the impact upon the need for facilities.

Revenues and Expenditures

The objective of this section of the paper is to examine the potential budget reallocation impact of declining enrollments. Therefore, it is assumed that revenue is solely a function of time, all other factors are held constant, and a linear least-squares regression model is utilized to project revenue. Expenditures for public elementary and secondary education, on the other hand, are made a function of time and enrollment, with all other factors being held constant. The outcome is the estimation of a hypothetical budget surplus or deficit for school districts. The amount of the "surplus" (called the educational cash reserve) isolates the amount of "surplus" revenue which would be generated if revenues continue to climb at past rates and expenditures increase, but at a lesser rate due to enrollment shrinkage. Recognizing that surpluses will not continue (let alone increase), over the long run, alternative allocations of the educational cash reserve are then discussed--alternatives which will bring the budget into long-term balance.

The basic model used for expenditure and revenue projections is one in which the revenue and per pupil expenditure is viewed as a function of time and

the linear relationship between the variables is determined. The implicit assumption in making projections with this technique is that the trends of the past will continue in the future. Although the forces which have been responsible for these trends have changed, the basic momentum has been, and will continue to be, sustained. If the hypothesized relationship has a sufficiently high statistical significance, economists accept such assumptions, until the assumption is no longer realistic. The basic model, along with its statistical and logical assumptions, are not designed to explain phenomena but are common in most forecasts.[1/]

Although student numbers are to decline, costs will continue to rise. The U.S. Office of Education, which is projecting a national enrollment decrease over the next decade of nearly 12 percent, estimates that between 1972-73 and 1982-83 current operating expenditures for elementary and secondary education will increase by 25.7 percent and expenditures per pupil will increase 40.9 percent.[2/]

Costs of elementary and secondary education have risen dramatically during the last decade. Expenditures for administration, instruction, operation,

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1/ Office of Education, U.S. Department of Health, Education, and Welfare. Projections of Educational Statistics to 1982-83 (1973 Edition). See Appendix A "General Methodology" and "Estimation Methods". pp. 113-134.

2/ Harrison, Forest W. and C. George Lind. Projections of Educational Statistics to 1972-83 (1974 edition), "Expenditures of Educational Institutions," op. cit., p. 94.

Table II. TOTAL EXPENDITURES, ILLINOIS PUBLIC SCHOOL DISTRICTS, BY CATEGORY OF EXPENDITURES

	1963-64	1964-65	1965-66	1966-67	1967-68	1968-69	1969-70
Administration	$ 43,836,000	$ 44,318,000	$ 47,163,000	$ 51,768,000	$ 62,880,000	$ 68,433,000	$ 82,736,000
Instruction	$ 638,050,000	$ 686,913,000	$ 761,822,000	$ 876,248,000	$ 983,310,000	$1,114,466,000	$1,306,799,000
Student & Comm. Services	1/	1/	$ 106,538,000	$ 123,942,000	$ 132,557,000	$ 142,821,000	$ 164,996,000
Operation Maintenance & Fixed Charges	1/	1/	$ 251,381,000	$ 281,451,000	$ 321,507,000	$ 344,201,000	$ 416,325,000
Bond & Interest	1/	1/	$ 88,107,000	$ 93,888,000	$ 96,514,000	$ 103,428,000	$ 113,837,000
Capital Outlay	$ 156,372,000	$ 151,273,000	$ 181,671,000	$ 200,84[illegible]	$ 220,334,000	$ 241,907,000	$ 244,088,000
All Other	1/	1/	$ 36,203,000	$ 115,373,000	$ 18,637,000	$ 22,105,000	$ 22,308,000
Total	$1,224,761,000	$1,295,252,000	$1,472,885,000	$1,743,511,000	$1,835,738,000	$2,037,360,000	$2,351,088,000

	1970-71	1971-72	1972-73
Administration	$ 90,862,000	$ 95,561,000	$ 100,667,000
Instruction	$1,489,838,000	$1,590,271,000	$1,682,872,000
Student & Comm. Services	$ 178,979,000	$ 194,253,000	$ 214,239,000
Operation Maintenance & Fixed Charges	$ 489,895,000	$ 532,903,000	$ 596,654,000
Bond & Interest	$ 120,780,000	$ 127,702,000	$ 133,668,000
Capital Outlay	$ 243,938,000	$ 227,755,000	$ 229,039,000
All Other	$ 29,895,000	$ 34,106,000	$ 39,061,000
Total	$2,644,188,000	$2,802,550,000	$2,996,200,000

1/ The format of the Illinois Public Schools Financial Statistics for 1963-64 and 1964-65 was quite different making it impossible to obtain comparable data for these years, and for the specified categories of expenditures.

maintenance and fixed charges have more than doubled. Nearly 53 percent of current expenditures are to pay teachers with slightly more than 3 1/2 percent for paying administrators. Teacher salaries are currently increasing at an average of 7 percent per year, with the average salary of district superintendents increasing at roughly 9 percent per year. Expenditures for student and community services have increased by more than 80 percent. Noncurrent operating expenditures (for bonds, interest and capital outlay) have witnessed increases of less than 50 percent (see Table II).

The increase in operating expense per pupil [1/] has been dramatic. Operating expenditures per pupil were $481 in 1963-64, rising to $1228 by 1972-73. Although the increase in cash expenditures per pupil over the ten year period were equal to $747, the real expenditure per pupil in 1967 dollars increased $437 (from $521 to $958). The pressure of inflation upon rising school costs is illustrated by the difference between cash and real per pupil expenditures. The increase in real per pupil expenditures was 58.5 percent less than the increase in cash expenditures.

Continuation of the trends of the past ten years indicate that by 1982-83 operating expenditures per pupil will equal more than $2000. Between 1972-73 and 1982-83, current real expenditures per pupil are projected to rise from $1228 to $2023. [2/]

1/ Operating expense per pupil is defined as total of expenditures from the following funds: educational, operations, building and maintenance, bond and interest, transportation, municipal retirement, and rent. Subtracted from these expenditures are expenditures not applicable to the operating expenses of the regular term K-12 program which include: (a) total transportation payments from other districts: (b) tuition payments to other districts; (c) operations payments to other districts from the operation, building and mainenance fund; the bond and interest fund, and the transportation fund; (d) total expenditures from the educational and the operation, building and maintenance funds for adult education; (e) total expenditures from the educational fund for the following student and community services: summer school, economic opportunity project, and Manpower Development Act; (f) total capital outlay; (g) bond principal retired; and (h) transfers out of the educational and the bond and interest funds. The remaining expenditures are then divided by the average daily attendance of pupils actually being taught within the district.

2/ The increase in per pupil operating expenditure is highly linear over time. Using least squares regression analysis, treating expenditure as the dependent variable and time as the independent variable the correlation coefficient equaled 0.99 where a value of 1.00 indicates a perfect linear reationship. The least-squares regression equation is $Y=363.37 + 83.03t$ where Y is expenditure per pupil (measured in ADA) and t is time and equals 1...23 with 1 being the proxy variable for the first observation, 1963-64. The regression coefficient 83.03 has a standard error of 0.6521. It is 95 percent certain that the value of beta will lie between 92.162 and 73.894. The standard error of the estimate for the function equals 35.0799.

With expenditures projected to increase at an average annual rate of $83 per pupil (the slope of the regression line), a central question is whether revenues will increase at a pace adequate to keep in step with expenditures. Table III presents Illinois school district revenues by source between 1963-64 and 1972-73. Revenues have more than doubled over the ten year period from fiscal 1964 to fiscal 1973. Federal funds are nearly eight times greater, with revenues from general and other state aid being more than four times greater. Local tax support has increased by nearly 73 percent and revenues from student aid community services by 42 percent. Revenue from remaining sources, primarily the sale of bonds and interest income, increased by slightly more than 13 times, from $16.7 million to $217.8 million.

Table III. Public School Revenue (in millions)

Fiscal Year July 1 to June 30	Local Taxes	General State Aid	Other State Funds	Federal Funds	Student and Community Services	Other	Total
1963-64	$ 798.7	$ 187.3	$ 40.2	$ 19.4	$ 73.2	$ 16.7	$1,135.-
1964-65	855.3	201.1	43.8	22.9	79.0	17.0	1,219.1
1965-66	941.1	240.1	44.5	42.5	95.4	258.3	1,622.0
1966-67	789.4	276.5	44.7	74.1	110.7	355.0	1,650.4
1967-68	1096.5	369.1	47.2	72.5	118.9	239.6	1,943.9
1968-69	1079.5	383.2	68.0	88.2	100.2	219.9	1,938.9
1969-70	1510.4	615.1	68.5	102.5	98.7	165.1	2,560.3
1970-71	1145.1	718.4	102.6	153.6	101.0	146.9	2,367.7
1971-72	1660.8	758.7	113.2	145.5	104.1	230.6	3,013.2
1972-73	1379.4	864.2	161.0	158.8	104.3	217.8	2,885.6

Source: Department of Research, Statistics, and Evaluation. Illinois Public Schools Financial Statistics. Office of the Superintendent of Public Instruction.

As a percentage of school district revenues, the greatest change since 1963-64 has been the change in the relationship between local taxes and general state aid. Local taxes have decreased from 70 percent to 49 percent of revenues and general state aid has risen from 16 percent of FY '64 revenues to 30 percent of revenues in fiscal 1973.

District revenues are raised for current operating expenses as well as to meet long term capital investment needs. As the expenditure projections are based upon operating expense, non-operating revenues (i.e., those revenues raised for the purchase of goods and equipment) should be removed. Between 1969-70 and 1972-73, operating revenues from the various funds accounted for an average of 88.52 percent of revenues.

Although revenues, especially that from state and federal sources, are related in part to enrollment, the objective of this part of the analysis is to determine the hypothetical budget balance attributable to declining enrollment. To accomplish this purpose, it is assumed that total operating revenues for education are solely a function of time while total operating expenditures are a function of time and enrollment.

If the rate of increase in school district revenues were to continue at a pace comparable to that of the past ten years, school district operating revenues would increase by approximately $186 million per year. They would exceed $3 billion by

the end of this fiscal year (FY '75). By FY '81 revenues for operating purposes would exceed $4.1 billion and would exceed $5 billion by FY '86.[1/]

Comparisons of revenue and expenditure projections (Table IV) indicate that in the short-term (i.e., over the next four years) operating expenditures by Illinois public schools will exceed operating revenues. Over the short-run, it is expected that public elementary and secondary educators will be able to do little to meet the financial problems to be encountered during a period of declining enrollments. There are few variables at the control of district administrators. It has already been seen that one of the largest factors in rising costs is inflation, over which the administrator has no control. The most significant cuts can come through the reduction in staff size and decreasing operation and maintenance costs. These options are discussed elsewhere in the paper. Due to tenure laws, collective bargaining agreements, and public standards, staff reductions--if any--will be gradual,

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1/ Time is treated as the independent variable and total revenue as the dependent variable in the revenue projection model. The least square equation is $Y = 874.90 + 210.68t$ where Y is total revenue and t is time and equals 1...23 with 1 being the proxy variable for the first observation, 1963-64. The correlation coefficient for the equation equals 0.9718 and although indicating a high degree of linearity is insignificant due to the low number of degrees of freedom. The regression coefficient 186.28 has a standard error of 18.08 and is significant at the 0.01 level. It is 95 percent certain that the true value of beta lies between 167.91 and 253.45. The standard error of estimate for the function equals 164.26. To project operating revenue from total revenue, the estimated values of Y are multiplied by 88.5, where 88.5 is assumed to be the proportion of total revenue used for operating purposes.

attrition accounting for a substantial proportion of any declines[1]. In order to reduce maintenance and operating costs, the number of costlier, aged facilities will have to be reduced. Community pressures against abandoning and not replacing neighborhood schools are substantial, therefore, making this option difficult.[2]

School districts heavily reliant upon the state and federal government for a substantial portion of their revenues will be particularly hard pressed as state aid and reimbursable programs are often related to the number of pupils served. Many such districts are urban centers. For example, in 1972-73 nearly 78 percent of the revenue for East St. Louis School District 189 came from federal and state sources. Enrollment declines have been most dramatic in many of these urban centers.

1/ "Enrollment Trends and Staff Reduction." op. cit.

2/ Fewer Pupils/Surplus Space. op. cit.

"Declining Enrollment: What to Do." op. cit.

The forecasts, presented in Table IV, indicate that by the late 1970s enrollment declines will have been sustantial enough that the rate of increase in total expenditures will slacken.

Table IV. Projected Current Operation Expenditures and Revenues, Fiscal 1974 to 1980 and FY 1985 (rounded to nearest tenth of a million).

Fiscal Year	Expenditures 1/	Revenues	Hypothetical Balance 2/
1973-74	$2,962.8	$2,825.3	$ -137.5
1974-75	3,101.5	3,011.7	- 89.8
1975-76	3,249.0	3,198.2	- 50.8
1976-77	3,400.9	3,384.7	- 16.2
1977-78	3,505.6	3,571.1	- 65.5
1978-79	3,559.6	3,757.5	197.9

	2.1 birth rate	1.8 birth rate		2.1 birth rate	1.8 birth rate
1979-80	3,679.3	3,665.1	3,944.0	264.7	278.9
1980-81	3,773.3	3,743.6	4,130.5	357.2	386.9
1981-82	3,883.7	3,827.5	4,316.9	433.2	489.4
1982-83	4,001.3	3,916.3	4,503.4	502.1	587.1
1983-84	4,148.6	4,028.5	4,689.8	541.2	661.3
1984-85	4,316.5	4,154.4	4,876.3	559.8	721.9
1985-86	4,498.3	4,293.7	5,062.7	564.4	769.0

1/ Estimated by multiplying projected expenditure per pupil (in ADA) and the projected number of pupils using the assumptions of a 2.1 and a 1.8 birth rate.

2/ The balance is hypothetical in the sense that long-run surpluses on deficits will not occur. School districts are forced to balance their budget. The purpose of the display is to demonstrate that if revenues continue to increase at rates comparable with the past and expenditures are related to past trends and number of pupils, the hypothetical balance would be the benefits of enrollment decline. It is to be expected that the rate of increase in revenues will decrease or the rate of expenditure will increase absorbing the surplus over the intermediate to long-run.

If expenditures and revenues continue to increase in a pattern consistent with the past by 1978-79 a slight surplus can be expected. The surpluses forecasted for the last two school years of the 1970s, and beyond, are substantial. By the 1979-80 and the 1985-86 school year surpluses are projected to equal $264.7 million and $564.4 million (assuming a 2.1 birth rate), and $278.9 million and $769.0 million (assuming a 1.8 birth rate).

Obviously, surpluses of such magnitude will not occur. Either spending will increase at a greater rate or revenues from tax sources will be adjusted downward eliminating the surplus. Potential surpluses of $200 million in 1978-79 and $564.4 to $769.0 million in 1985-86 represent the potential educational "cash reserve" which declining enrollments will provide policymakers in the early 1980s.

This "cash reserve" could be used to change the structure of support for education by greater increases in the level of state assistance to public schools. Property tax relief would be a reality. The desire to allocate the fiscal benefits of enrollment decline for property tax relief may be offset by the need to allocate the "cash reserve" to other state priorities.

Alternatively the educational "cash reserve" could be diminished by increases in educational expenditures at a rate substantially greater than over the past ten years. The "surplus" could be utilized for the hiring of additional teachers, paying for new facilities, or for improved student and professional services. There is some evidence of initial movement in this direction through capital assistance for

new facilities. Also, based upon projected salaries and the projected 1985-86 "cash reserve", a decision to continue to support education at the present trend would provide money to hire an additional 31,000 teachers, providing an important resource required for greater individualization of learning.

Demand for Teachers

With rising costs, increasing salaries, and declining enrollments, teachers will be facing a double cutting-edge of a falling demand for certificated teachers and increased pressures to reduce costs. According to U. S. Office of Education estimates:

> The total demand for additional teachers over the 1968-72 period was 1,036,000. For the 1973-77 period, OE projects, the demand will be for 847,000. For the 1978-82 period, demand will fall to 760,000. Total demand for all teachers, which rose from 1,855,000 in 1967 to 2,097,000 in 1972, will drop to 2,036,000...[1/]

The report continues:

> Most of the need for new teachers will derive from teacher turnover...But 143,000 teachers--or rather--teaching positions--will no longer be needed because of declining enrollments.[2/]

In the fall of 1973 Illinois employed 5.2 percent of the public school classroom teachers in the nation. Assuming this ratio remains constant, by 1982 7500 teachers will be displaced in Illinois by declining enrollments.

The teacher displacement factor of declining enrollments can be examined through another approach. If the present pupil-teacher ratios are maintained, how many teachers will be required in the future?

1/ "OE Projects Fewer Kids, Lower Enrollments. More Spending." Education Daily, June 18, 1974. p. 4

2/ Ibid. p. 5.

In the fall of 1973, there were 110,402.9 full-time equivalent classroom teachers in public schools in the State of Illinois. Two years earlier, the fall of 1971, there were 99,295.6 full-time equivalent classroom teachers. [1] For every full-time equivalent classroom teacher there were 20.5 pupils in 1973, down from 23.5 in the fall of 1971.

Table V displays the number of full-time equivalent teachers that will be required during the 1974-75 through the 1985-86 school years based upon projected enrollments presented in Table I and differing assumptions as to the pupil-teacher ratio. During the 1974-75 school year, if the number of pupils per teacher increases from the fall of 1973 ratio of 20.5 to 21 pupils per teacher, there will be a need for nearly 2000 fewer teachers than were employed during the 1973-74 school year. On the other hand, if the ratio declines, there will be a demand for additional teachers in 1974-75. In examining Table V, if the number of pupils per full-time equivalent teacher remains at twenty-one, 13,800 to 14,500 fewer classroom teachers will be required in the fall of 1980 than were employed in the fall of 1973. By the 1985-86 school year, there will be a need for 16,300 to 20,500 fewer teachers, with from 90,900 to 94,100 teachers required to maintain a pupil-teacher ratio of 20.5.

Obviously, if the trend of fewer pupils per teacher continues in the future, more teachers will be required than under the assumption of 21 pupils per teacher.

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[1] These figures include special education teachers and pupils, and are from data collected on the Fall Enrollment and Housing Report, a document collected in the fall of each year from school districts and processed by the Statistics Section.

Table V. Number of Public School Classroom, Teachers Required, Given Projected Enrollments and Assuming Alternative Pupil-Staff Ratios (not including Special Education Staff)

School Year	Alternative Pupil-Teacher Ratios 1/					
	21		20		18	
1974-75	108,500		114,000		126,700	
1975-76	107,100		112,600		125,100	
1976-77	106,000		111,500		123,800	
1977-78	103,700		109,000		121,100	
1978-79	100,100		105,200		116,900	
	2.1 birth rate	1.8 birth rate	2.1 birth rate	1.8 birth rate	2.1 birth rate	1.8 birth rate
1979-80	98,600	98,200	103,700	103,300	115,200	114,700
1980-81	96,600	95,900	101,600	100,800	112,800	111,900
1981-82	95,200	93,800	100,100	98,600	111,200	109,600
1982-83	94,100	92,100	98,900	96,800	109,800	107,500
1983-84	93,700	91,000	98,500	95,600	109,400	106,200
1984-85	93,800	90,200	98,600	94,900	109,500	105,400
1985-86	94,100	89,900	99,000	94,500	109,900	104,900

1/ The pupil-teacher ratio for the fall of 1973 was 20.5.

Assuming a ratio of 20 pupils per teacher 114,000 teachers would be needed in 1974-75. However, based upon present student enrollment forecasts maintenance of the same ratio would require from 94,500 to 99,000 teachers by the fall of 1985. This would represent a decline of 10 to 14 percent of the number of full-time equivalent teaching positions between the fall of 1973 and the fall of 1985.

Under the 2.1 birth rate, demand for teachers is projected to begin to increase in both 1984-85 and 1985-86. However, should the present downward birth trends continue, as assumed by the 1.8 birth rate, teacher demand will continue downwards through the 1985-86 school year, although the downward pressure will be less. The altered direction of demand under the 2.1 birth rate assumption and the reduced rate of decline under the assumption of 1.8 births for every woman of child-bearing age, reflects an anticipated increase in the number of women in the 14 to 44 age group.

If gradual progress were made in reducing the number of pupils per teacher to 20 by the fall of 1977, with movement towards a ratio of 18 pupils per teacher by the fall of 1981, for the next eight years a teacher work force of approximately 110,000 could be maintained. With a birth rate of 1.8, the pupil-teacher ratio would have to fall below 18 to retain the same level of work force. Estimates indicate that if, in the fall of 1985, the teaching force has been maintained at the fall of 1973 level (110,400 full-time equivalents), expenditures would be

between $296.7 million to $373.1 million greater than projected in an earlier section of this paper.[1/] That is, roughly 50 percent of the educational "cash reserve" would be required to accomplish this purpose. A teacher force of 110,000 would lower the pupil-teacher ratio to between 17.1 to 17.9 pupils per teacher, the ultimate ratio depending upon the birth rate between 1974 and 1980.

This is not to imply that new teachers will not be required under the above conditions. Due to teacher turnover each year, there will be a need for teachers. Data on certificated staff in Illinois school districts, except Chicago, indicate that 11 percent of the 1972-73 certificated staff left their employment in Illinois public schools, leaving 8848 positions vacant. Between the 1972-73 and the 1973-74 school year, an additional 710 teaching positions were created. The vacated and new positions were filled by 5770 new beginning teachers and 3788 teachers who re-entered the profession.[2/]

In summary, if a conscious decision is made by those who make educational policy to reduce the pupil-teacher ratio and to allocate money to districts to allow them to do so, a teaching force of nearly 110,000 can be maintained. Assuming a turnover rate of 11 percent, there would be a need for an additional 12,000 teachers each year. If no such decision is made, school districts can be expected

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1/ The lower projected increase is based upon an assumed birth rate of 2.1 while the higher increase is based upon a 1.8 birth rate between 1974 and 1980. The lower birth rate and maintenance of the present teaching force will provide the lowest pupil-teacher ratio.

2/ If the turnover rate for all other school districts is applied to Chicago, an additional 2550 positions were opened in Chicago through teacher turnover.

to reduce their teaching staff as enrollments decline. The teaching work force would be expected to decline by 11 to 20 thousand by the fall of 1985, with 10 to 11 thousand teachers being required each year in order to provide turnover replacements. 1/

Impact Upon Higher Education

It is not the purpose of this section to make an in-depth examination of the repercussions of declining enrollment upon institutions of higher learning, but merely to raise some observations.

Although the number of high school graduates is still increasing, and has been projected to do so until 1977, many universities have already experienced either declining enrollments or enrollments rising less rapidly than had been predicted. Private universities are increasingly in a precarious position.

Enrollment declines in higher education have occurred without the impact of the declining number of live births which began in 1959. Once the waves of that receding tide strike higher education, current problems will multiply many fold.

Should current patterns continue, resources committed to higher education during the post-Sputnik "boom period" will be greatly under-utilized. Dormitories will be increasingly difficult to fill and could be turned into public housing. Shrinking class sizes, combined with relatively fixed staff numbers, will greatly increase per pupil costs, placing upward pressure on tuition charges or increased state commitment.

1/ These forecasts are based upon a pupil-teacher ratio of from 20 to 21 and a turnover rate of 11 percent. A decision to lower the retirement age for teachers would increase the turnover rate and would create an additional demand for new teachers.

Another problem, which relates directly to elementary and secondary education, will be the need to adjust teacher supply with the demand for more new teachers. As was stated earlier, maintenance of the present teaching force will require some fairly deliberate decisions. If those decisions are made nearly 12,000 replacement teachers will be required this year.

In 1971, in the nearly 60 Illinois colleges and universities with teacher education programs, 16,840 students completed Bachelor's degree preparation for standard teaching certificates. This declined to 13,247 by 1973.

To determine the number of new teacher graduates required, if there is no increase in the aggregate number of teaching positions, the number of new teachers required to meet the demands of turnover is determined by multiplying the projected number of teachers required at a specified student-teacher ratio by the turnover rate. The number of positions created by turnover that will be filled by teachers who are re-entering the profession is then determined. The remainder of the positions represent those turnover positions open to new graduates.

As was stated earlier, depending upon whether a conscious decision is made to provide the financial resources to reduce the pupil-teacher ratio and depending upon future birth rate, by the fall of 1985 the number of teachers required could be as low as 89,900 and as high as 109,900 (Table V). Assuming a turnover rate of 11 percent and that 40 percent of the vacated positions are filled by re-entering teachers, the number of positions open to recent college graduates would range

from 5900 to 7300. When one considers that there were 13,247 graduates in 1973, it is easy to visualize the adjustment problems as universities adjust the supply of new teachers to the projected demand. If no such adjustments occur there will continue to be an oversupply of teachers.

The pessimistic job outlook with respect to teaching will act as the strongest short-run depressant upon future teacher supply. In the longer run, declining college enrollments will act as the principal depressant.

Issues which arise from the above analysis include:

a) Is direct action needed to check the supply of new teachers? Practices which could be followed would be to freeze the number of certificates which can be issued or renewed, or apply higher standards for the issuance or renewal of certificates.

b) Should attempts be made to make room for new teachers, either through revising the retirement system so as to encourage early retirement and/or use of some uniform competency-based evaluation.

c) Are state approved teacher education programs in 61 colleges and universities required in order to meet the demand for teachers up to mid-1980s? Unless there are deliberate efforts to induce early retirement or to reduce the pupil-teacher ratio, there will be a need for less than 8000 new teachers in any given year over the next twelve years.